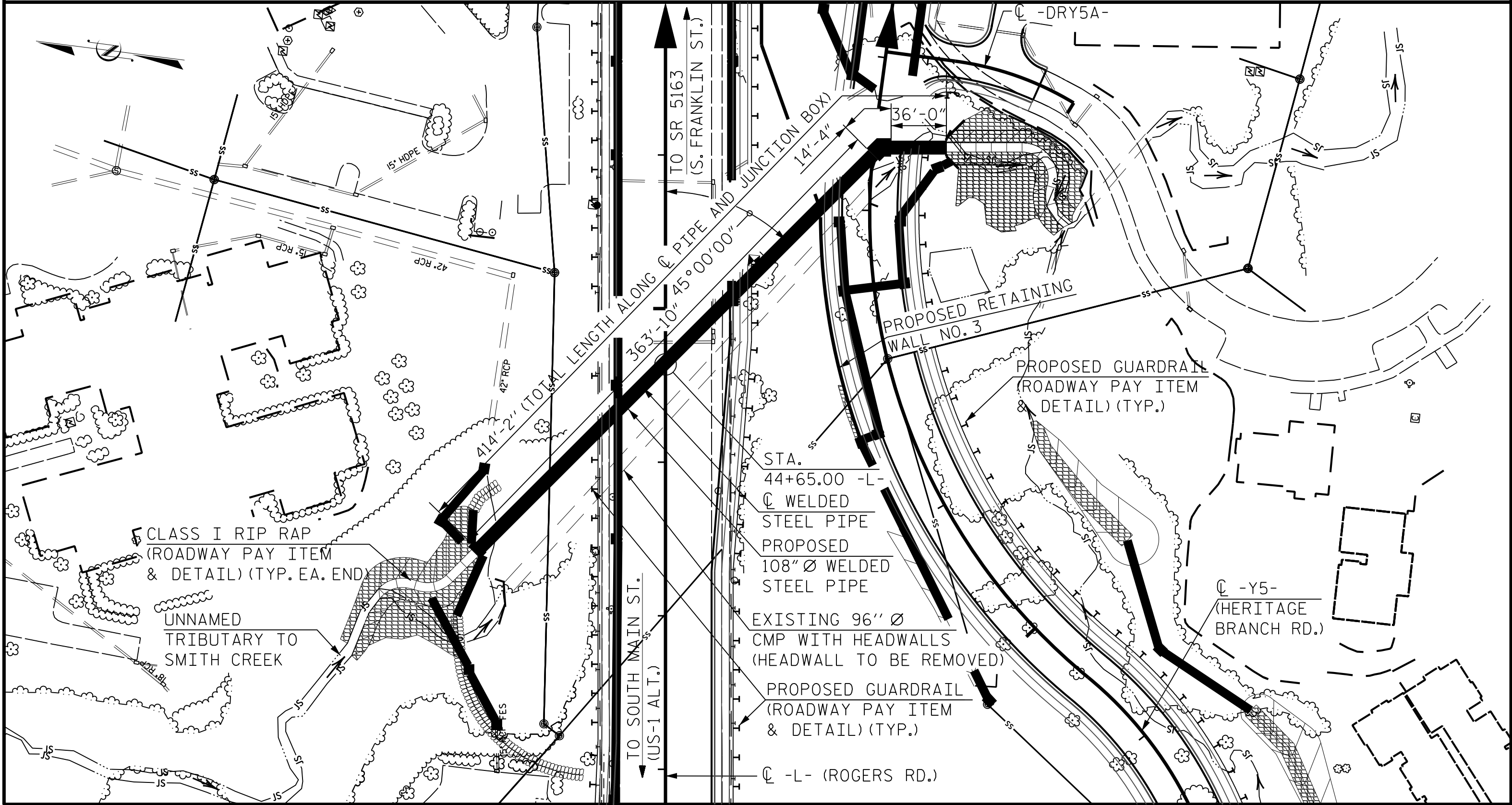
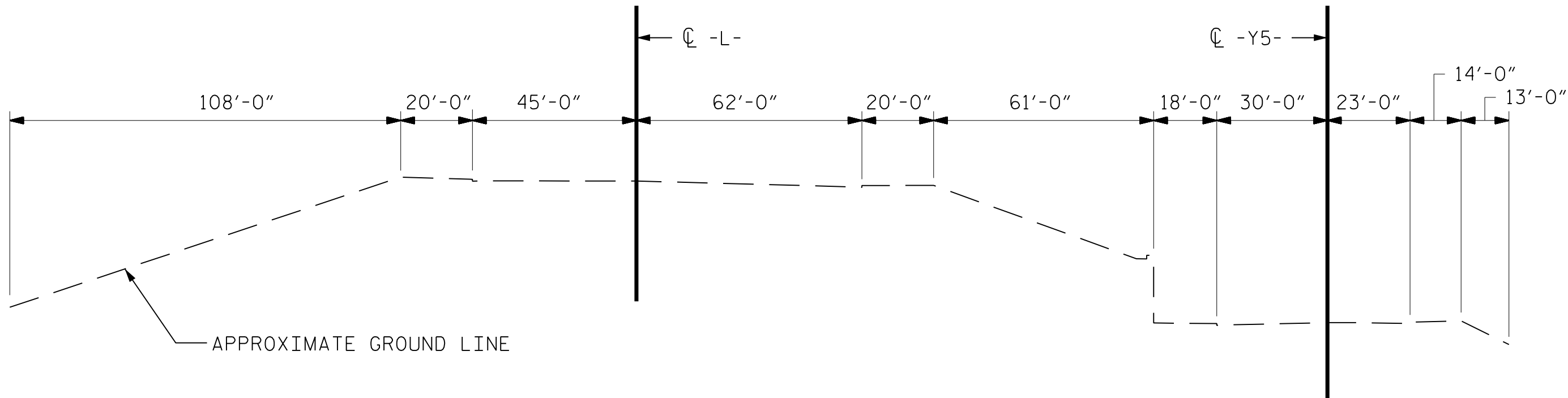


BM #10: RAILROAD SPIKE IN 12" PINE TREE, 57.47' RT. OF STA. 45+31.17 -L-, EL. 300.95



LOCATION SKETCH

FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS



PROFILE ALONG CULVERT

INLET STRUCTURE QUANTITIES	
FOUNDATION CONDITIONING MATERIAL	36 TONS
REINFORCING STEEL	
HEADWALL	1,084 LBS.
WINGS ETC.	3,188 LBS.
TOTAL	4,272 LBS.
CLASS A CONCRETE	
HEADWALL	3.9 C.Y.
WING ETC.	36.9 C.Y.
TOTAL	40.8 C.Y.

JUNCTION BOX STRUCTURE QUANTITIES	
FOUNDATION CONDITIONING MATERIAL	30 TONS
REINFORCING STEEL	
JUNCTION BOX	4,220 LBS.
TOTAL	4,220 LBS.
CLASS A CONCRETE	
JUNCTION BOX	25.5 C.Y.
TOTAL	25.5 C.Y.

OUTLET STRUCTURE QUANTITIES	
FOUNDATION CONDITIONING MATERIAL	62 TONS
REINFORCING STEEL	
HEADWALL	959 LBS.
WINGS ETC.	2,069 LBS.
TOTAL	3,028 LBS.
CLASS A CONCRETE	
HEADWALL	3.3 C.Y.
WING ETC.	25.0 C.Y.
TOTAL	28.3 C.Y.

TOTAL STRUCTURE QUANTITIES	
GEOTEXTILE, TYPE 4	200 S.Y.

DRAWN BY : A. J. WOLCOTT DATE : NOV 2024
CHECKED BY : A. L. STROUD DATE : NOV 2024
DESIGN ENGINEER OF RECORD : A. L. STROUD DATE : NOV 2024

NOTES:

ASSUMED LIVE LOAD ----- HL-93 OR ALTERNATE LOADING.

DESIGN FILL ----- 4.20 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN INLET AND OUTLET HEADWALLS AND WINGWALLS TO BE POURED IN THE FOLLOWING ORDER:

1. WINGWALL AND HEADWALL FOOTINGS INCLUDING 4" OF WINGWALLS AND HEADWALLS.
2. THE REMAINING PORTION OF WINGWALLS AND HEADWALL FOR FULL HEIGHT.

CONCRETE IN JUNCTION BOX TO BE POURED IN THE FOLLOWING ORDER:

1. FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS.
2. THE REMAINING PORTION OF WALLS TO THE CONSTRUCTION JOINT.
3. ROOF SLAB

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN HEADWALL ARE SHOWN ON WING SHEET.

FOR THE JUNCTION BOX, AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF THE EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

HEADWALLS TO BE REMOVED FROM EXISTING 96"Ø CMP. AFTER REMOVAL OF HEADWALLS, CMP WILL BE FILLED WITH FLOWABLE FILL.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

EXCAVATE A MINIMUM OF 1 FOOT BELOW JUNCTION BOX, HEADWALL, AND WINGWALL FOOTINGS AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL PER SECTION 414 OF THE STANDARD SPECIFICATIONS.

UNDERCUT SOFT/LOOSE ALLUVIAL SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL PER SECTION 414 OF THE STANDARD SPECIFICATIONS.

PERFORM AN ADDITIONAL 2 FEET OF UNDERCUT EXCAVATION TO REMOVE SOFT/LOOSE ALLUVIAL MATERIAL AT THE JUNCTION BOX AND OUTLET HEADWALL/WINGWALL FOOTINGS. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL PER SECTION 414 OF THE STANDARD SPECIFICATIONS.

PRIOR TO PLACING FOUNDATION CONDITIONING MATERIAL FOR THE JUNCTION BOX AND OUTLET HEADWALL/WINGWALL FOOTINGS, INSTALL TYPE 4 GEOTEXTILE AT THE BOTTOM OF THE EXCAVATION AND WRAP UP THE SIDE WALLS OF THE EXCAVATION.

WEATHERED ROCK IS ANTICIPATED TO BE ENCOUNTERED AT EL 252 TO 270 FT.

UTILITIES BY OTHERS SHALL BE RELOCATED PRIOR TO CULVERT WORK WHERE POSSIBLE. THE UTILITIES INCLUDE: WAKE ELECTRIC, CENTURYLINK, WINDSTREAM, CHARTER, AND PSNC.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION SEQUENCE, SEE TRANSPORTATION MANAGEMENT PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE-----345 C.F.S.
FREQUENCY OF DESIGN FLOOD-----50 YR.
DESIGN HIGH WATER ELEVATION-----270.6
DRAINAGE AREA-----180 AC
BASE DISCHARGE (Q100)-----350 C.F.S.
BASE HIGH WATER ELEVATION-----270.6

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE-----1616 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD-----500+ YR
OVERTOPPING FLOOD ELEVATION-----306.7
OVERTOPPING OCCURS AT -L- 46+60.98

ROADWAY DATA

GRADE POINT ELEV. @ STA. 44+65.00 -L- = 308.7
BED ELEV. @ STA. 44+65.00 -L- = 259.45
ROADWAY SLOPES = 2:1

PROJECT NO. P-5707
WAKE COUNTY
STATION: 44+65.00 -L-

SHEET 1 OF 8

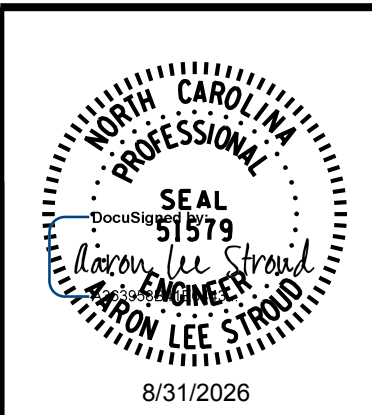
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

108"Ø WELDED STEEL PIPE
WITH JUNCTION BOX
45°00'00" SKEW

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-40
2			4			TOTAL SHEETS 8

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LOAD AND RESISTANCE FACTOR RATING (LRFR)
SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	# CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										COMMENT NUMBER
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR					
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)		
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	2.21	--	1.75	2.21	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.25	1	LEFT END OF BOTTOM SLAB	0.1		
	HL-93 (OPERATING)	N/A		2.87	--	1.35	2.87	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.92	1	LEFT END OF BOTTOM SLAB	0.1		
	HS-20 (INVENTORY)	36,000	2	1.46	52.6	1.75	1.68	1	MIDDLE TOP SLAB, INSIDE FACE	5.17	1.46	1	LEFT END OF BOTTOM SLAB	0.1		
	HS-20 (OPERATING)	36,000		1.89	68.0	1.35	2.17	1	MIDDLE TOP SLAB, INSIDE FACE	5.17	1.89	1	LEFT END OF BOTTOM SLAB	0.1		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.86	52.1	1.40	3.86	1	LEFT END OF BOT SLAB	0.1	4.91	1	LEFT END OF BOTTOM SLAB	0.1		
		SNGARBS2		3.73	74.6	1.40	3.73	1	LEFT END OF BOT SLAB	0.1	4.59	1	RIGHT END OF BOT SLAB, OUTSIDE FACE	10.33		
		SNAGRIS2		3.84	84.5	1.40	3.84	1	LEFT END OF BOT SLAB	0.1	4.91	1	LEFT END OF BOTTOM SLAB	0.1		
		SNCOTTS3		2.19	59.7	1.40	2.51	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.19	1	LEFT END OF BOTTOM SLAB	0.1		
		SNAGGRS4		2.26	78.9	1.40	2.64	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.26	1	LEFT END OF BOTTOM SLAB	0.1		
		SNS5A		2.17	77.1	1.40	2.53	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.17	1	LEFT END OF BOTTOM SLAB	0.1		
		SNS6A	3	2.17	86.7	1.40	2.52	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.17	1	LEFT END OF BOTTOM SLAB	0.1		
		SNS7B		2.17	91.1	1.40	2.52	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.17	1	LEFT END OF BOTTOM SLAB	0.1		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		3.18	104.9	1.40	3.18	1	RIGHT BOT SLAB, OUTSIDE FACE	10.33	3.31	1	LEFT END OF BOTTOM SLAB	0.1		
		TNT4A		2.6	86.0	1.40	2.94	1	RIGHT BOT SLAB, OUTSIDE FACE	10.33	2.6	1	LEFT END OF BOTTOM SLAB	0.1		
		TNT6A		2.31	96.1	1.40	2.68	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.31	1	RIGHT END OF BOT SLAB, OUTSIDE FACE	10.33		
		TNT7A		2.45	102.9	1.40	2.83	1	LEFT END OF BOT SLAB	0.1	2.45	1	RIGHT END OF BOT SLAB, OUTSIDE FACE	10.33		
		TNT7B		2.3	96.6	1.40	2.67	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	2.3	1	LEFT END OF BOTTOM SLAB	0.1		
		TNAGRIT4		2.6	111.8	1.40	2.84	1	RIGHT BOT SLAB, OUTSIDE FACE	10.33	2.6	1	LEFT END OF BOTTOM SLAB	0.1		
		TNAGT5A		2.6	117.0	1.40	2.88	1	LEFT END OF BOT SLAB	0.1	2.6	1	RIGHT END OF BOT SLAB, OUTSIDE FACE	10.33		
		TNAGT5B		2.6	117.0	1.40	2.86	1	LEFT END OF BOT SLAB	0.1	2.6	1	LEFT END OF BOTTOM SLAB	0.1		
EMERGENCY VEHICLE	EV2		3.13	90.0	1.30	3.13	1	LEFT END OF BOT SLAB	0.1	3.22	1	LEFT END OF BOTTOM SLAB	0.1			
	EV3		4	1.76	75.7	1.30	2.03	1	MIDDLE BOT SLAB, INSIDE FACE	5.17	1.76	1	LEFT END OF BOTTOM SLAB	0.1		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

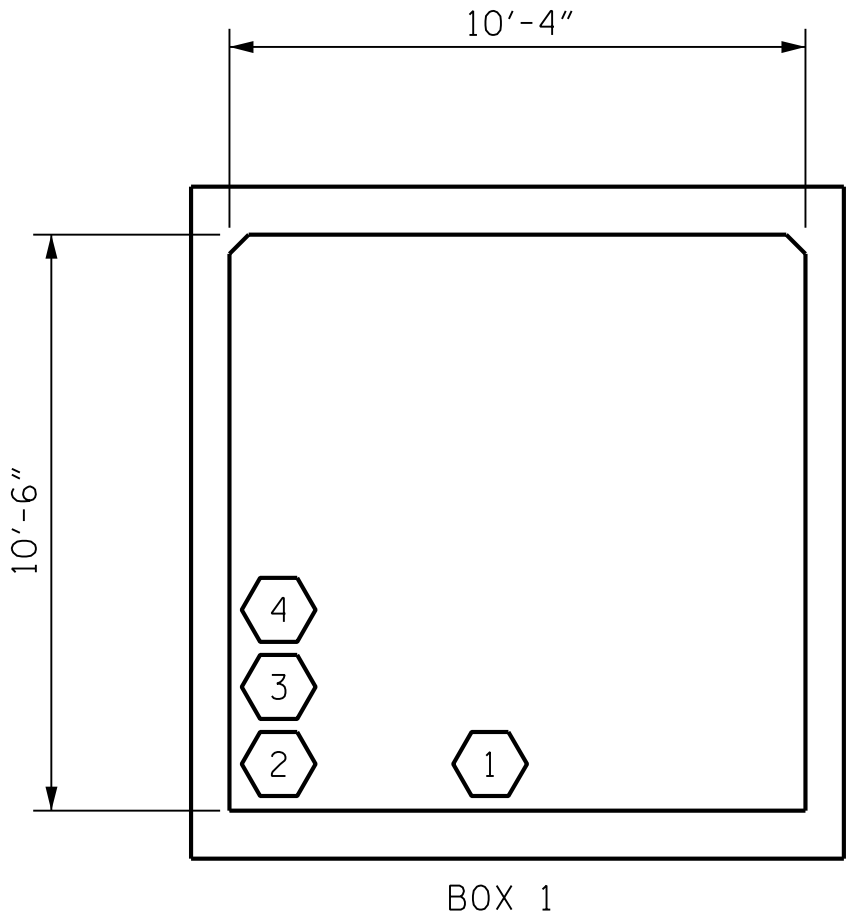
NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

-
-
-
-

⬡	CONTROLLING LOAD RATING
⬡1	DESIGN LOAD RATING (HL-93)
⬡2	DESIGN LOAD RATING (HS-20)
⬡3	LEGAL LOAD RATING **
⬡4	EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



PROJECT NO. P-5707
WAKE COUNTY
STATION: 44+65.00 -L-

SHEET 2 OF 8

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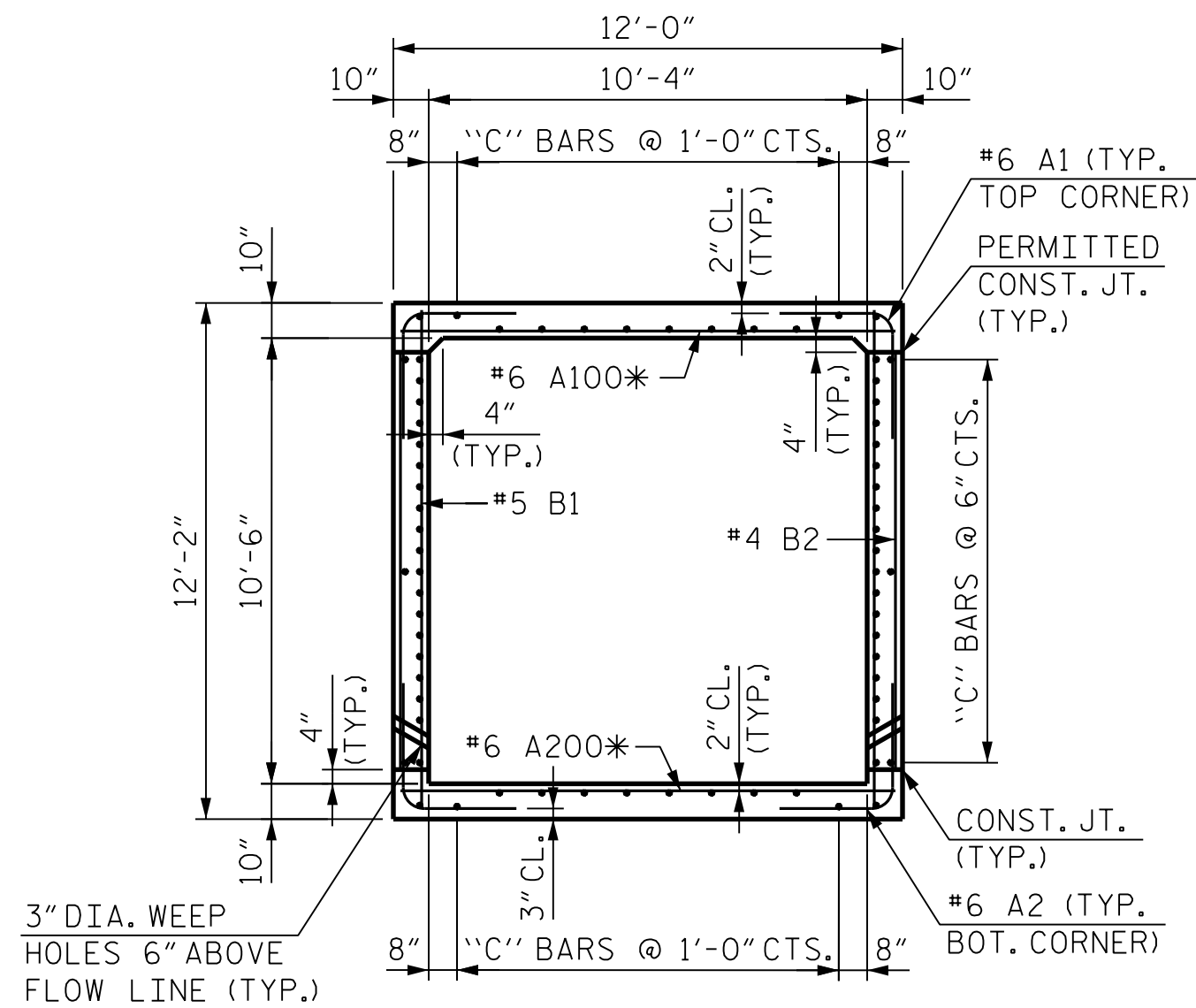


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
REINFORCED CONCRETE
BOX CULVERTS
(NON-INTERSTATE TRAFFIC)

REVISIONS					SHEET NO. S-41
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS
2			4		8

DRAWN BY : A. J. WOLCOTT DATE : NOV 2024
CHECKED BY : A. L. STROUD DATE : NOV 2024
DESIGN ENGINEER OF RECORD : A. L. STROUD DATE : NOV 2024

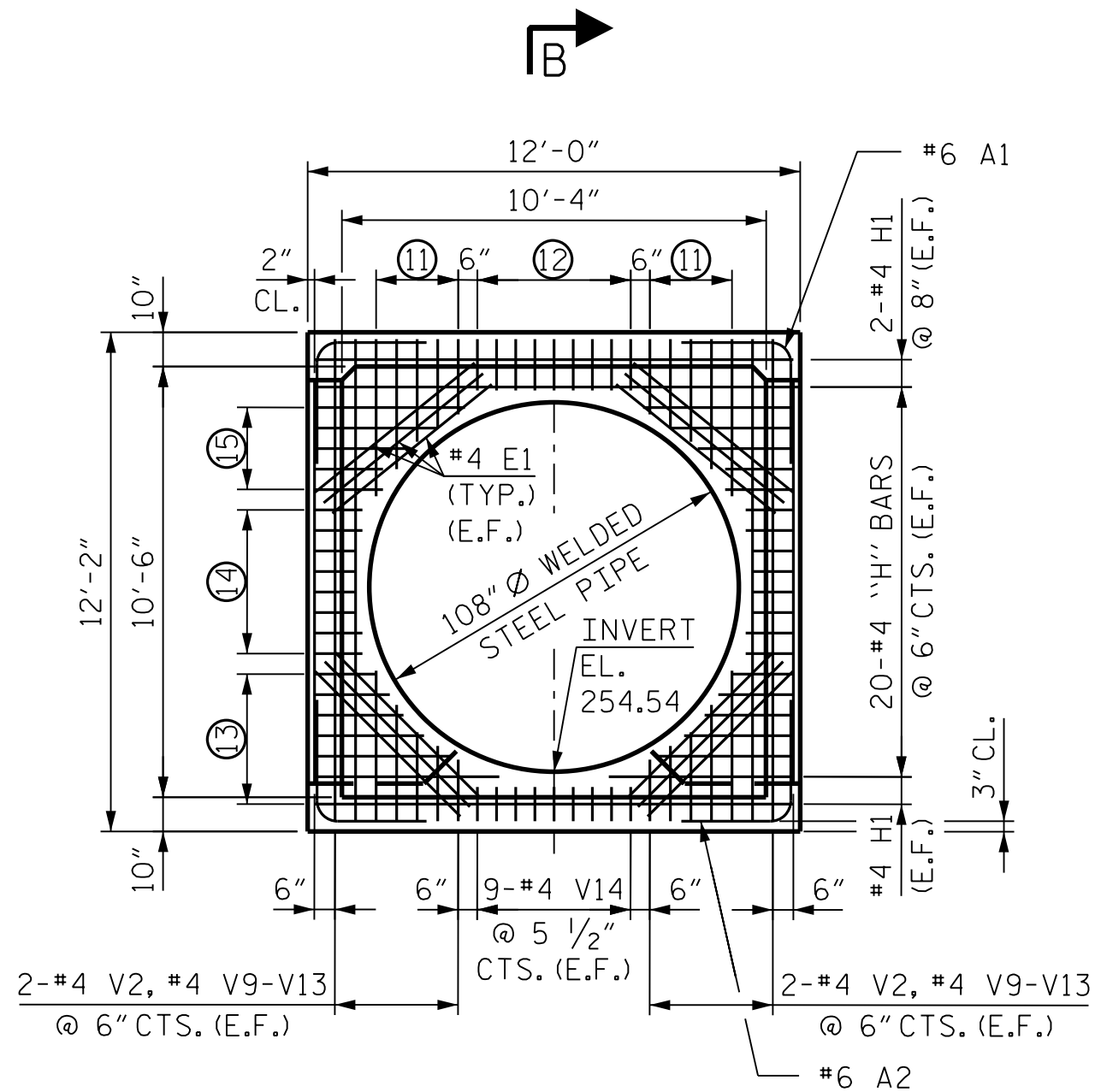
3/30/2026 R:\Structures\CON\Headwall\FINAL\P5707_SMU_HDW03.dgn



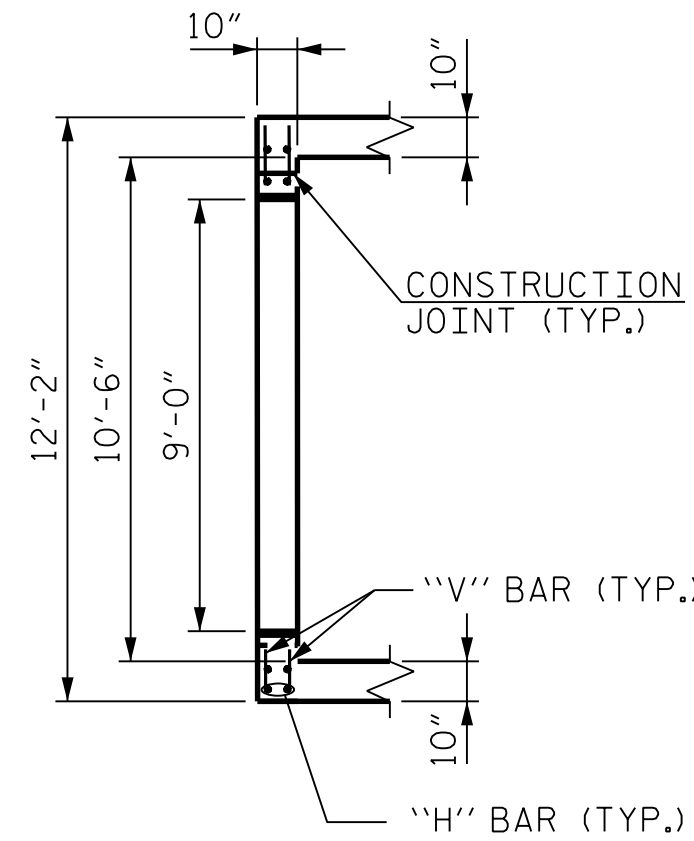
* DENOTES CUT BARS

RIGHT ANGLE SECTION OF JUNCTION BOX

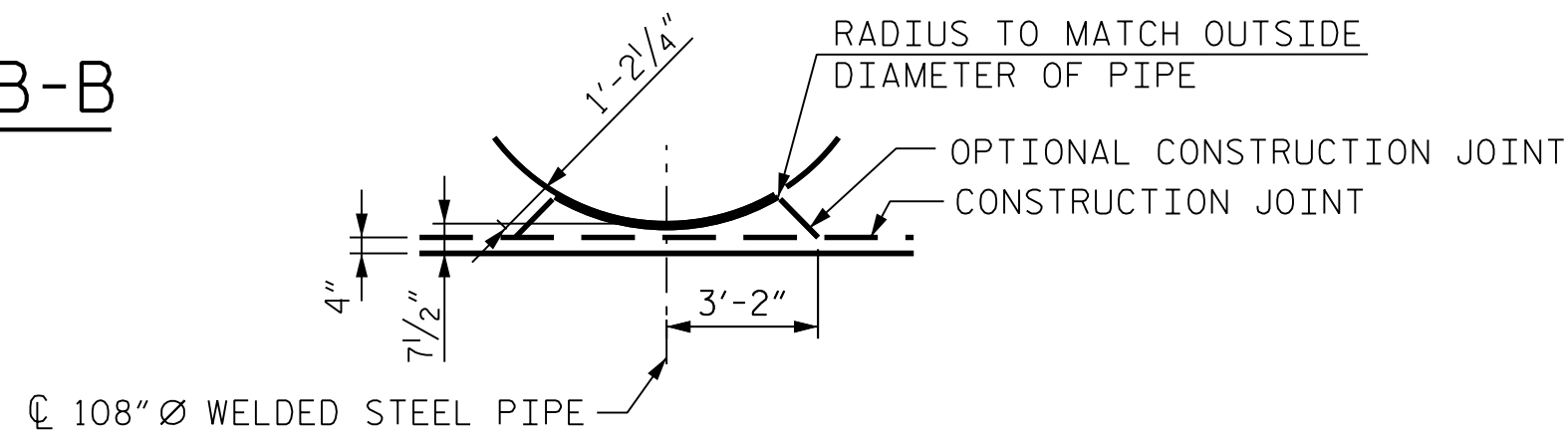
THERE ARE 70 "C" BARS IN SECTION OF BARREL



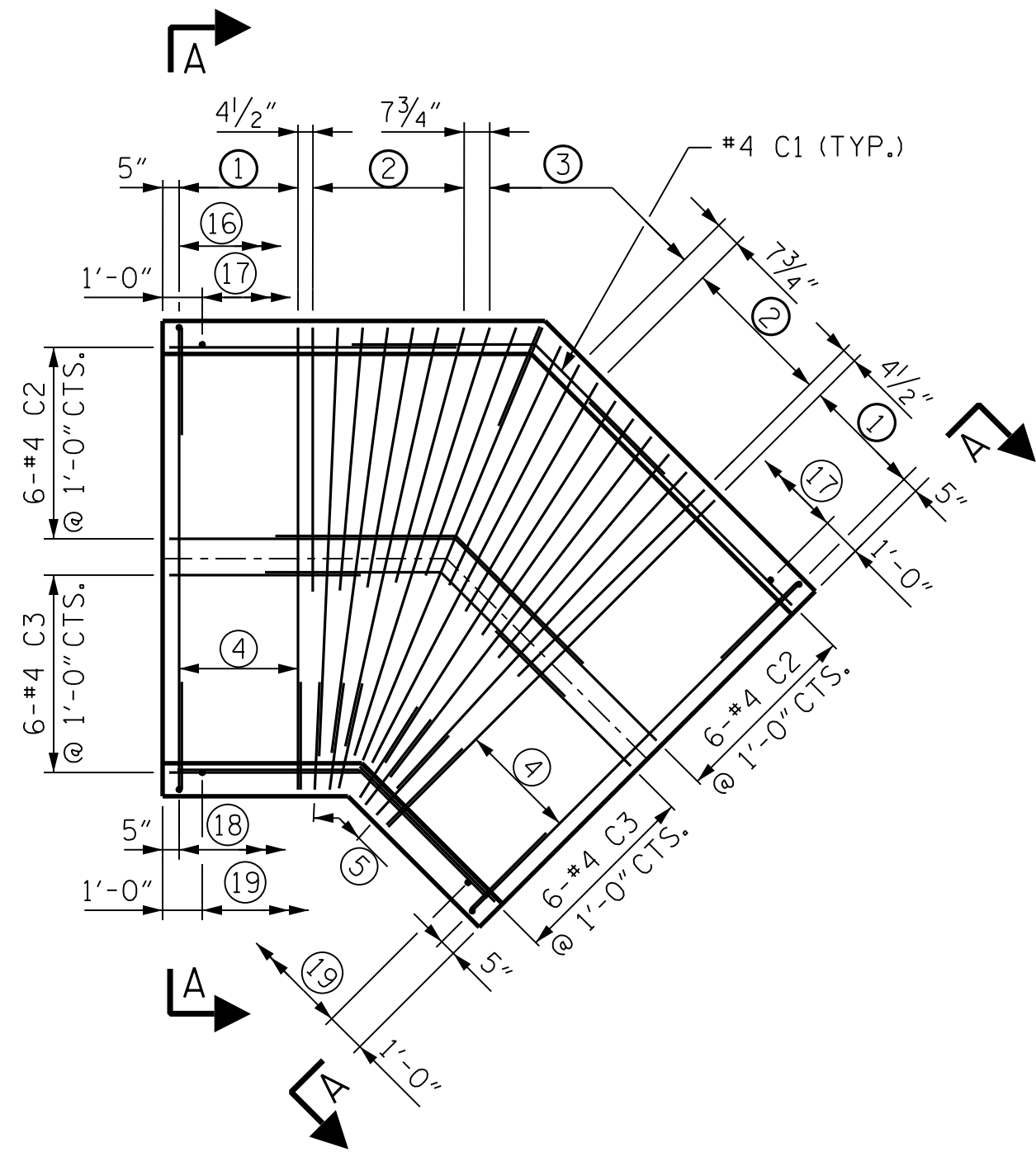
SECTION A-A



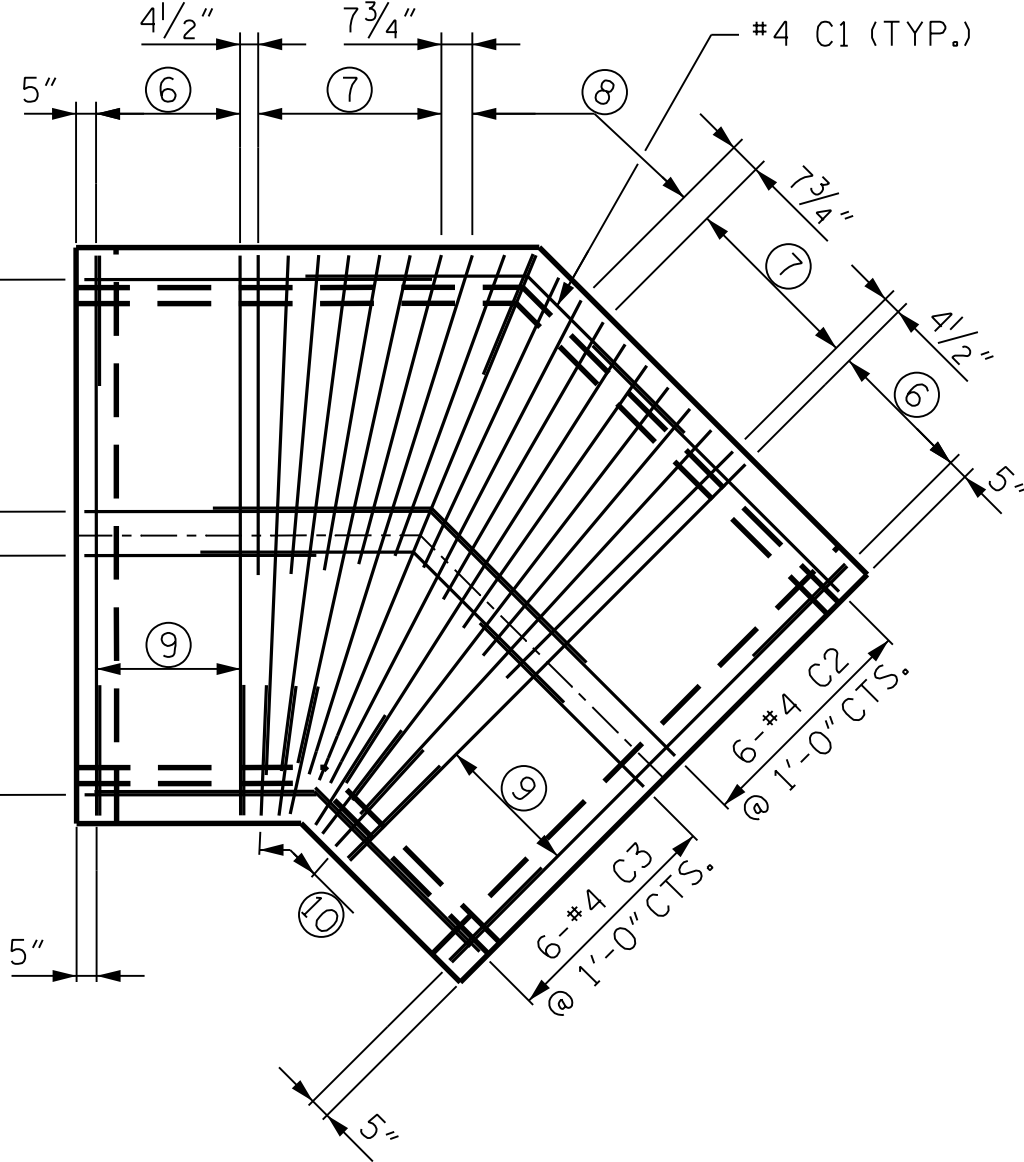
SECTION B-B



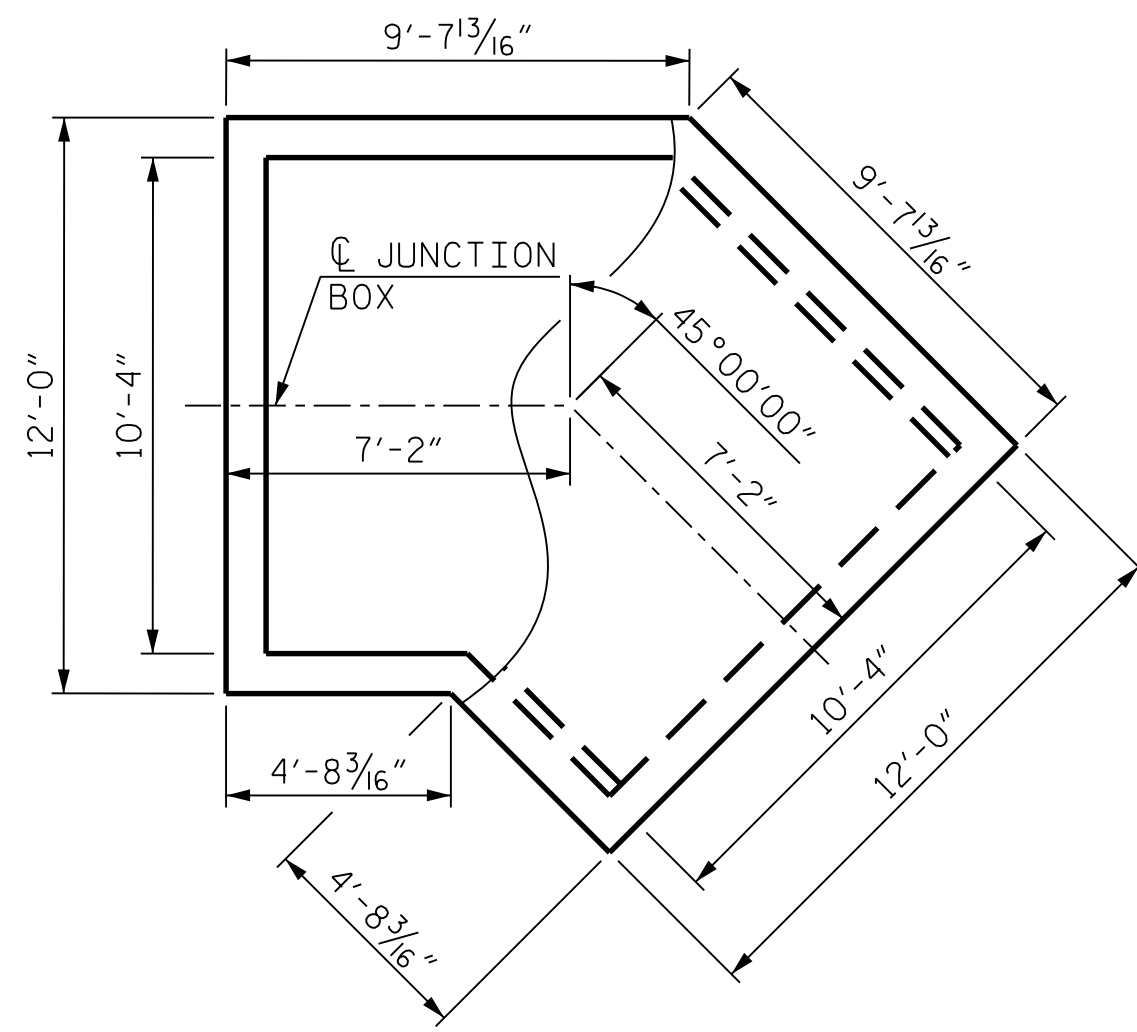
CONSTRUCTION JOINT DETAIL



PLAN FLOOR SLAB



PLAN ROOF SLAB



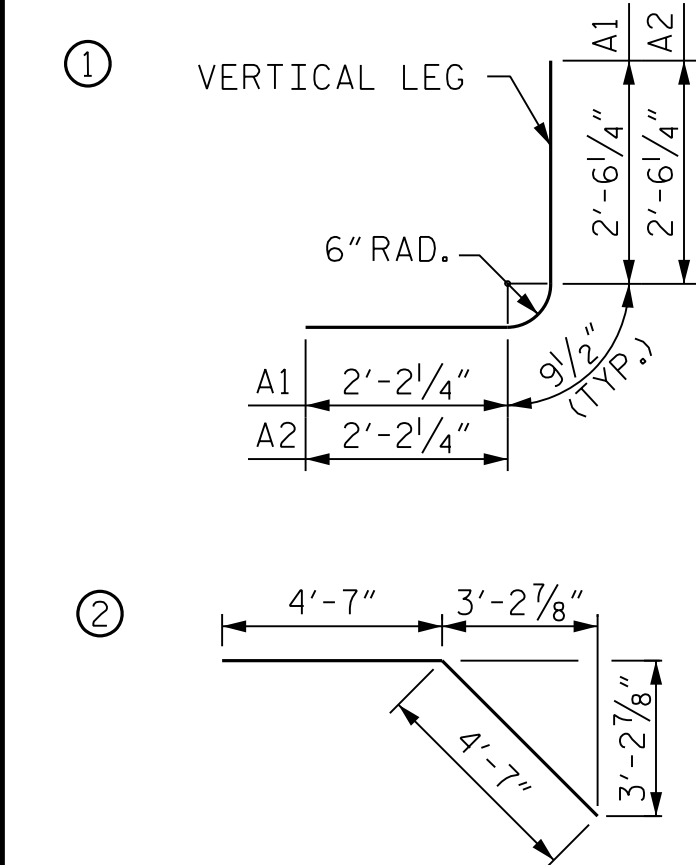
PART PLAN ROOF SLAB AND FLOOR SLAB

- ① 5-#7 A200 @ 9" CTS. (TOP OF FLOOR SLAB)
5-#6 A2 (CORNER BARS, SEE BARREL SECTION)
- ② 3-#7 A202 & 4-#7 A201 (TOP OF FLOOR SLAB)
7-#6 A2 (CORNER BARS, SEE BARREL SECTION) SPLAYED AS SHOWN
- ③ 3-#7 A203, 2-#7 A201 (TOP OF FLOOR SLAB)
5-#6 A2 (CORNER BARS, SEE BARREL SECTION) SPLAYED AS SHOWN
- ④ 5-#6 A2 (CORNER BARS, SEE BARREL SECTION)
- ⑤ 6-#6 A2 (CORNER BARS, SEE BARREL SECTION)
MATCH TO #7 A202
- ⑥ 5-#7 A100 @ 9" CTS. (BOTTOM OF ROOF SLAB)
5-#6 A1 (CORNER BARS, SEE BARREL SECTION)

- ⑦ 3-#7 A102 & 4-#7 A101 (BOTTOM OF ROOF SLAB)
7-#6 A1 (CORNER BARS, SEE BARREL SECTION) SPLAYED AS SHOWN
- ⑧ 3-#7 A103, 2-#7 A101 (BOTTOM OF ROOF SLAB)
5-#6 A1 (CORNER BARS, SEE BARREL SECTION) SPLAYED AS SHOWN
- ⑨ 5-#6 A1 (CORNER BARS, SEE BARREL SECTION)
MATCH TO #7 A102
- ⑩ 6-#6 A1 (CORNER BARS, SEE BARREL SECTION)
MATCH TO #7 A102
- ⑪ #4 V3-V7 @ 6" CTS. (E.F.) (TYP. EA. SIDE)
- ⑫ 9-#4 V8 @ 5 1/2" CTS. (E.F.) (TYP. EA. SIDE)

- ⑬ #4 H8-H13 (E.F.) (TYP. EA. SIDE)
- ⑭ 2-#4 H6, 4-#4 H7, 2-#4 H6 (E.F.) (TYP. EA. SIDE)
- ⑮ #4 H2-H4, 2-#4 H5 (E.F.) (TYP. EA. SIDE)
- ⑯ 29-#4 B2 (MATCH TO A BARS)
- ⑰ 12-#5 B1 @ 9" CTS.
- ⑱ 16-#4 B2 (MATCH TO A BARS)
- ⑲ 6-#5 B1 @ 9" CTS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL (JUNCTION BOX)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	45	#6	1	5'-6"	372
A2	45	#6	1	5'-6"	372
A100	10	#7	STR.	11'-8"	238
A101	10	#7	STR.	6'-8"	136
A102	6	#7	STR.	10'-10"	133
A103	3	#7	STR.	11'-4"	69
A200	10	#7	STR.	11'-8"	238
A201	10	#7	STR.	6'-8"	136
A202	6	#7	STR.	10'-10"	133
A203	3	#7	STR.	11'-4"	69
B1	36	#5	STR.	11'-9"	441
B2	45	#4	STR.	9'-10"	296
C1	68	#4	2	9'-2"	416
C2	68	#4	STR.	7'-3"	329
C3	68	#4	STR.	4'-10"	220
E1	48	#4	STR.	5'-0"	160
V1	8	#4	STR.	9'-10"	53
V2	16	#4	STR.	11'-9"	126
V3	8	#4	STR.	3'-10"	20
V4	8	#4	STR.	3'-2"	17
V5	8	#4	STR.	2'-6"	13
V6	8	#4	STR.	2'-2"	12
V7	8	#4	STR.	1'-10"	10
V8	36	#4	STR.	1'-3"	30
V9	8	#4	STR.	3'-8"	20
V10	8	#4	STR.	2'-10"	15
V11	8	#4	STR.	2'-2"	12
V12	8	#4	STR.	1'-10"	10
V13	8	#4	STR.	1'-6"	8
V14	36	#4	STR.	10"	20
H1	12	#4	STR.	11'-8"	94
H2	8	#4	STR.	3'-8"	20
H3	8	#4	STR.	3'-0"	16
H4	8	#4	STR.	2'-4"	12
H5	16	#4	STR.	1'-8"	18
H6	32	#4	STR.	1'-2"	25
H7	32	#4	STR.	1'-0"	21
H8	8	#4	STR.	1'-6"	8
H9	8	#4	STR.	1'-10"	10
H10	8	#4	STR.	2'-2"	12
H11	8	#4	STR.	2'-8"	14
H12	8	#4	STR.	3'-4"	18
H13	8	#4	STR.	4'-6"	24

REINFORCING STEEL 4,220 LBS.
CLASS A CONCRETE 25.5 CY

E.F. = EACH FACE
S.F. = STREAM FACE
F.F. = FILL FACE

PROJECT NO. P-5707
WAKE COUNTY
STATION: 44+65.00 -L-

SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JUNCTION BOX DETAILS

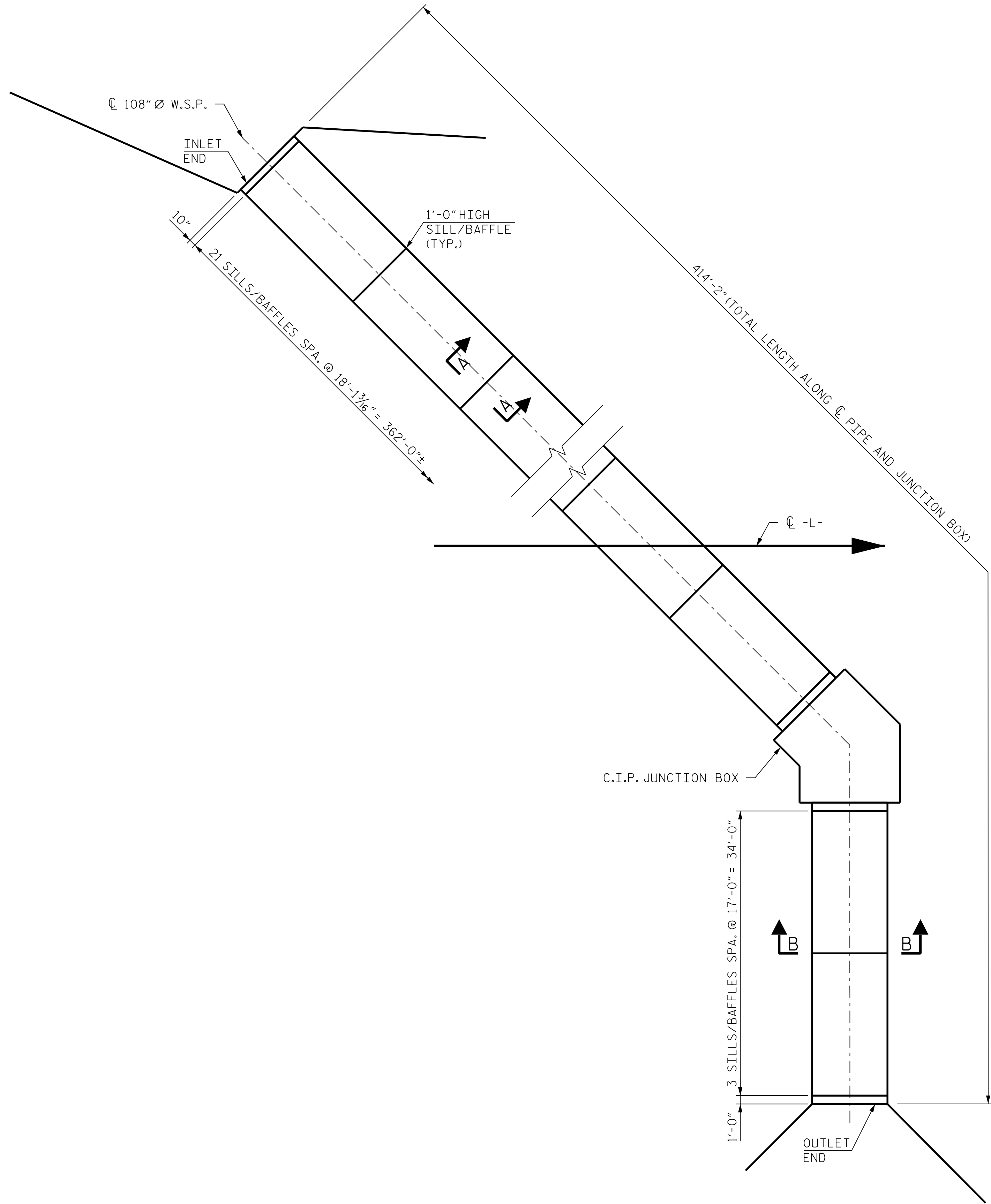
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-42
2			4			
TOTAL SHEETS						8

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3/31/2026

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SILL PLAN

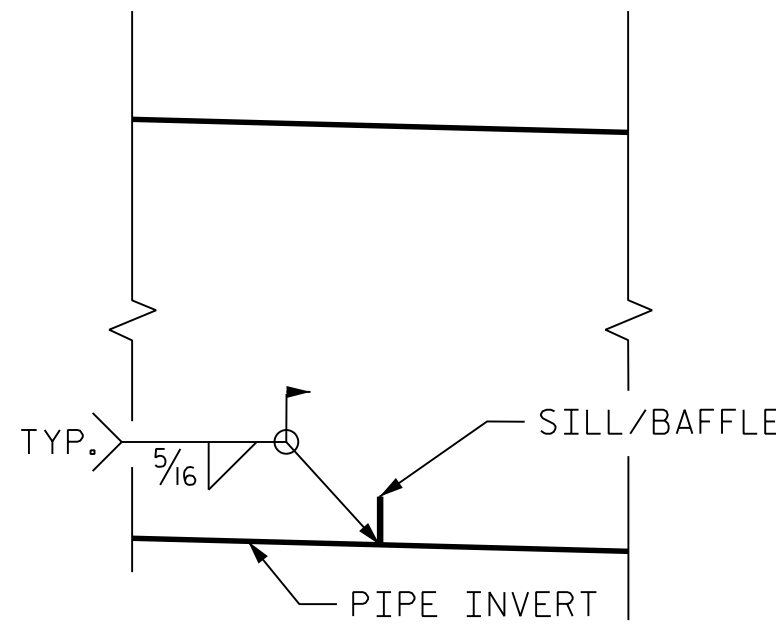
NOTES:

BACKFILLING WORK IS NOT REQUIRED FOR THIS PROJECT. THE PIPES ARE TO BE ALLOWED TO BACKFILL NATURALLY.

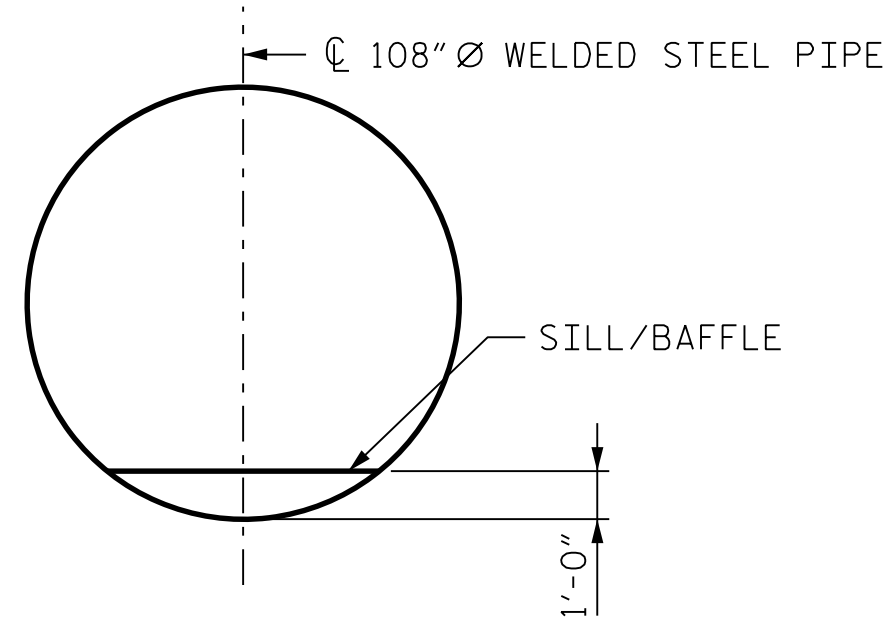
SILLS/BAFFLES SHALL BE COMPOSED OF THE SAME MATERIAL AS THE WELDED STEEL PIPE. SILLS SHALL BE A MINIMUM OF 1/2" THICK.

SILLS/BAFFLES SHALL BE INSTALLED AFTER THE PIPES HAVE BEEN BORED AND JACKED.

SILL/BAFFLES SHALL HAVE SAME STEEL PROTECTIVE COATING AS PIPE. ANY DAMAGE TO THE PROTECTIVE COATING OF SILLS/BAFFLES OR PIPE DURING THE COURSE OF SILL/BAFFLE INSTALLATION SHALL BE REPAIRED.



SECTION A-A



SECTION B-B

PROJECT NO. P-5707
WAKE COUNTY
STATION: 44+65.00 -L-

SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SILL/BAFFLE LAYOUT
& DETAILS

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

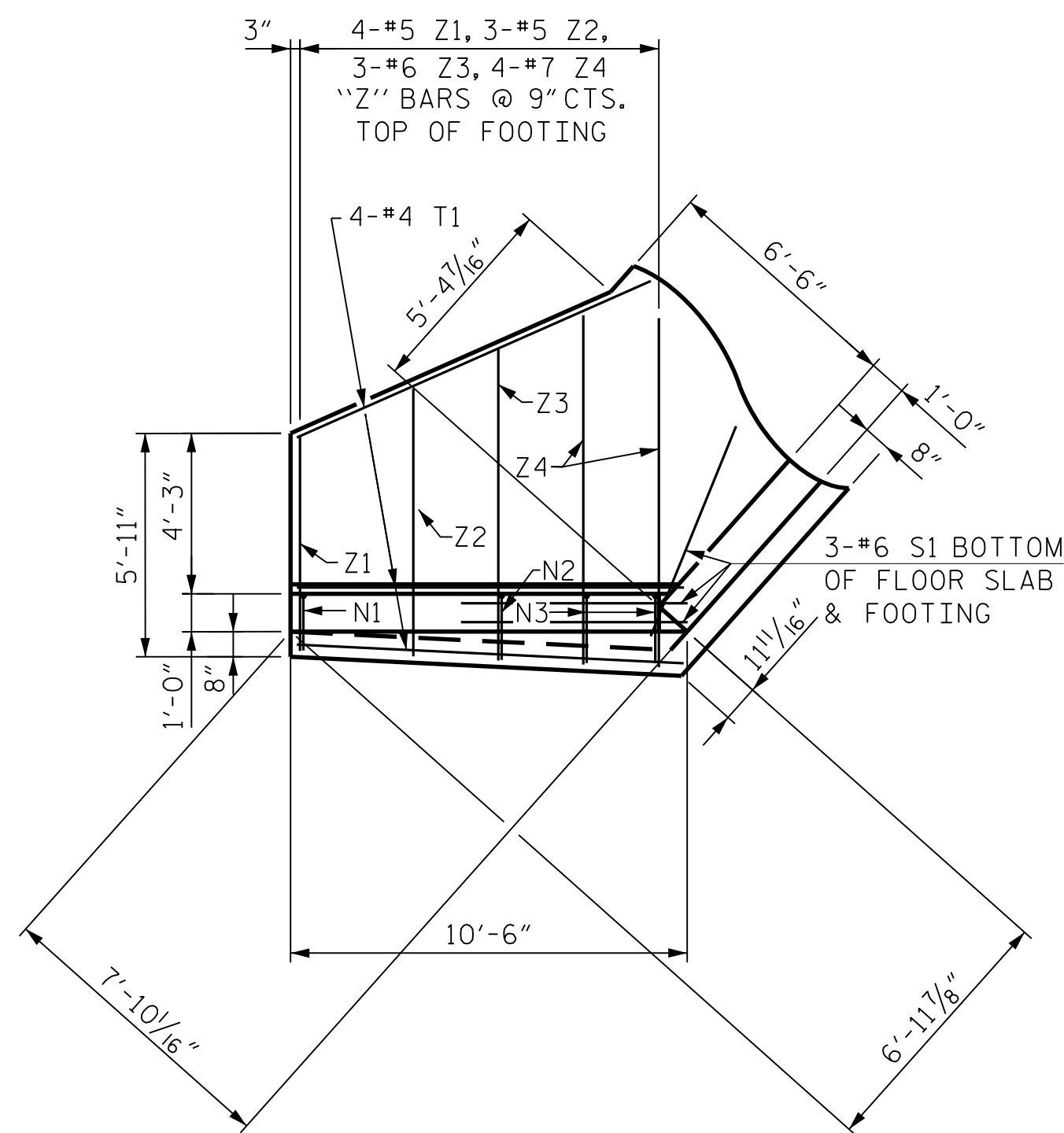
SHEET NO.
S-43
TOTAL
SHEETS
8

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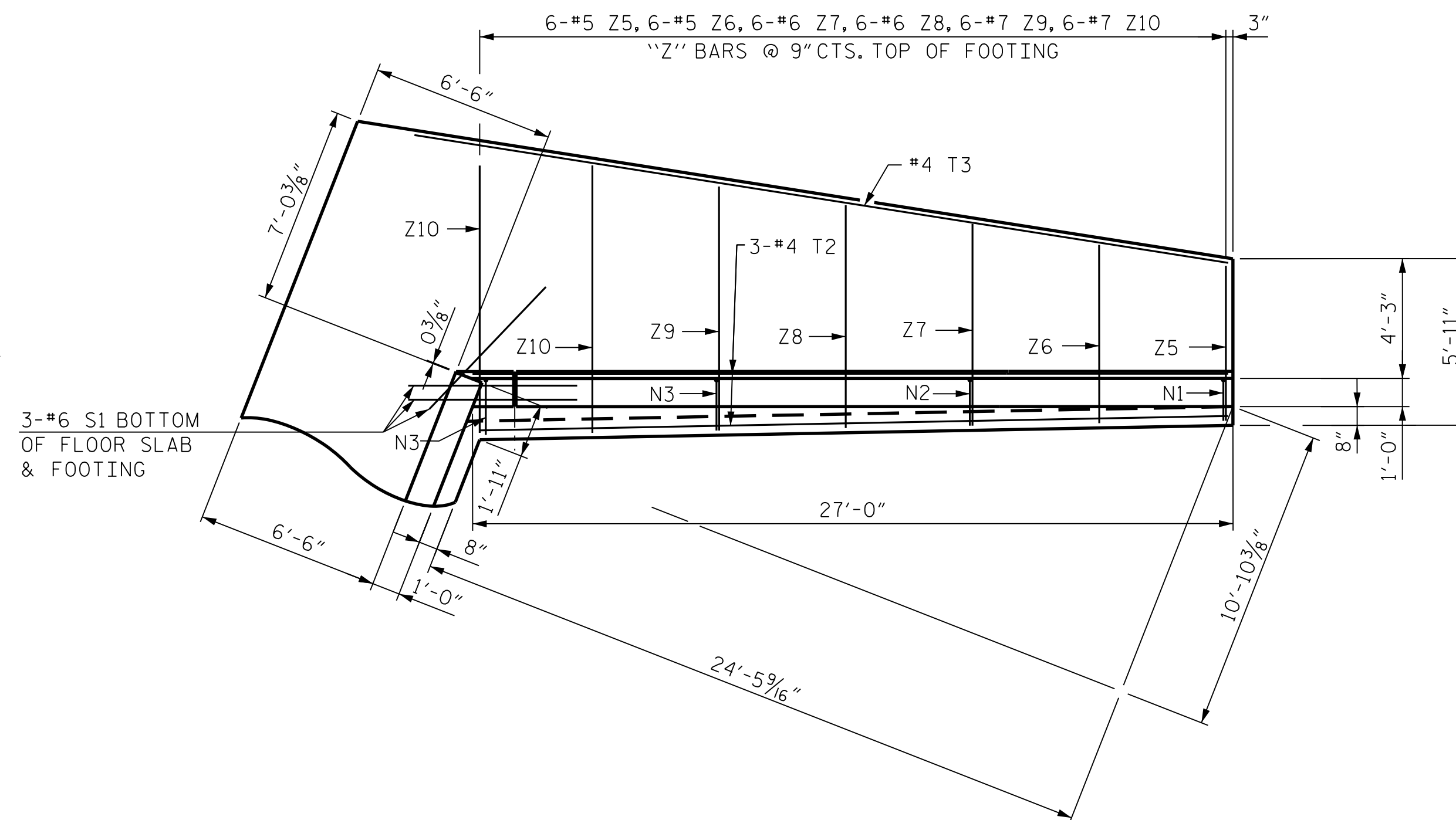
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STATE OF NORTH CAROLINA
PROFESSIONAL
SEAL
51579
AARON LEE STROUD
3/31/2026

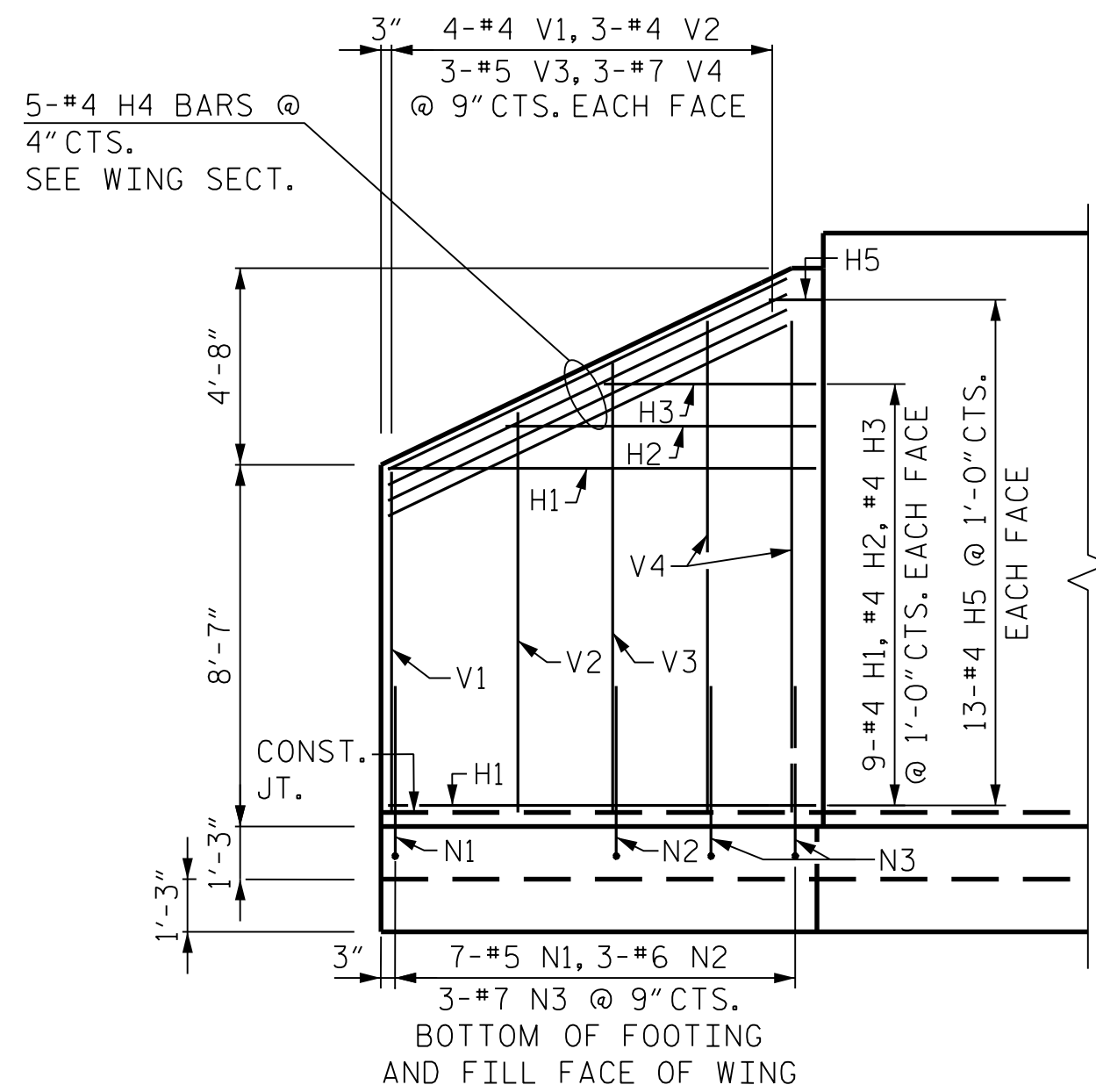
DRAWN BY : A. J. WOLCOTT DATE : NOV 2024
CHECKED BY : A. L. STROUD DATE : NOV 2024
DESIGN ENGINEER OF RECORD : A. L. STROUD DATE : NOV 2024



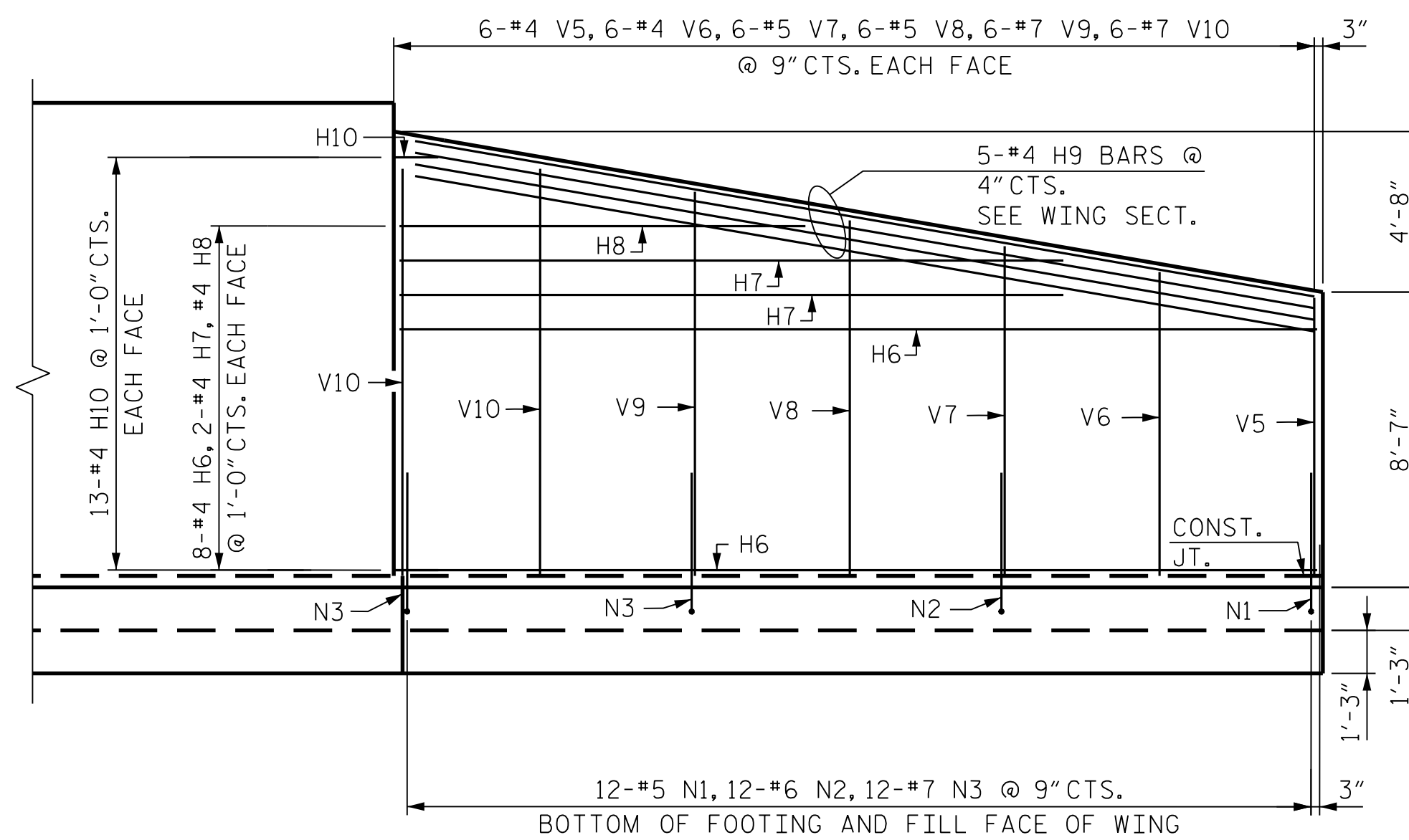
PLAN W1



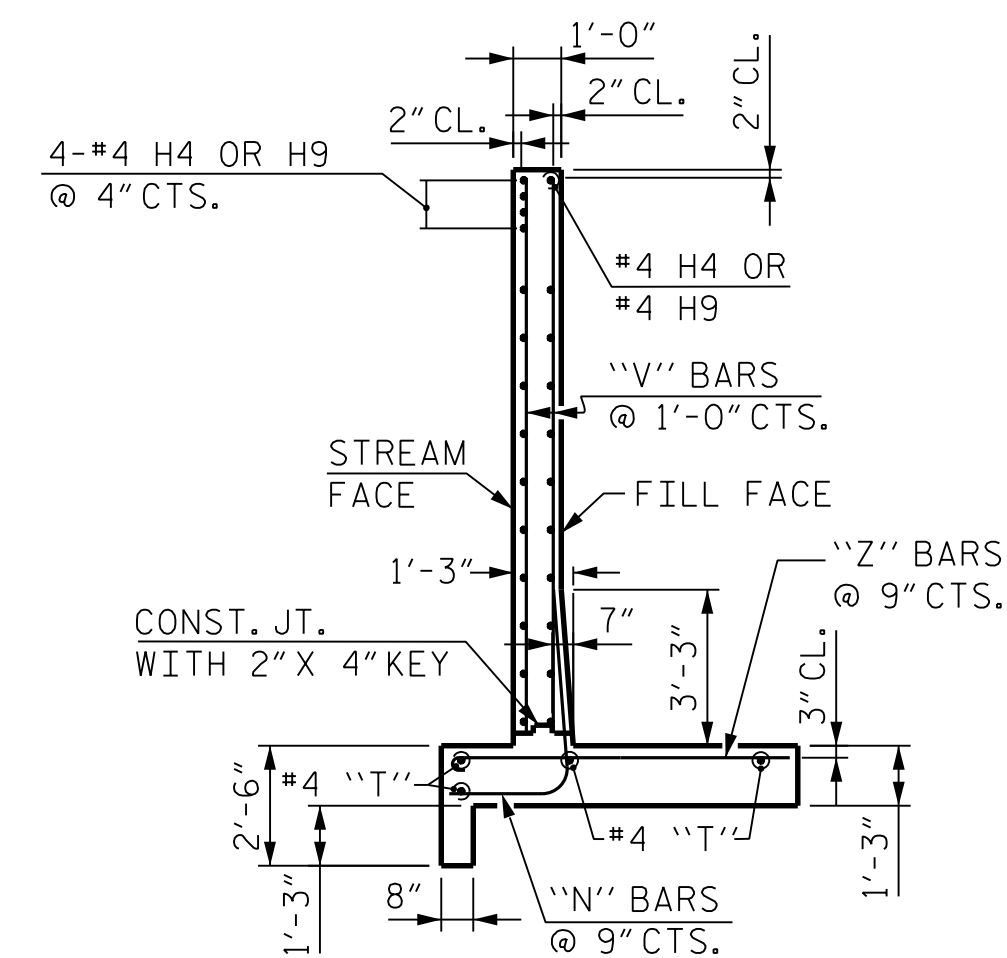
PLAN W2



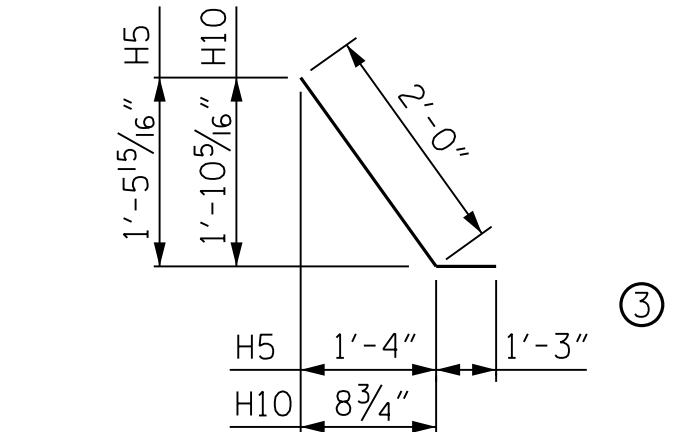
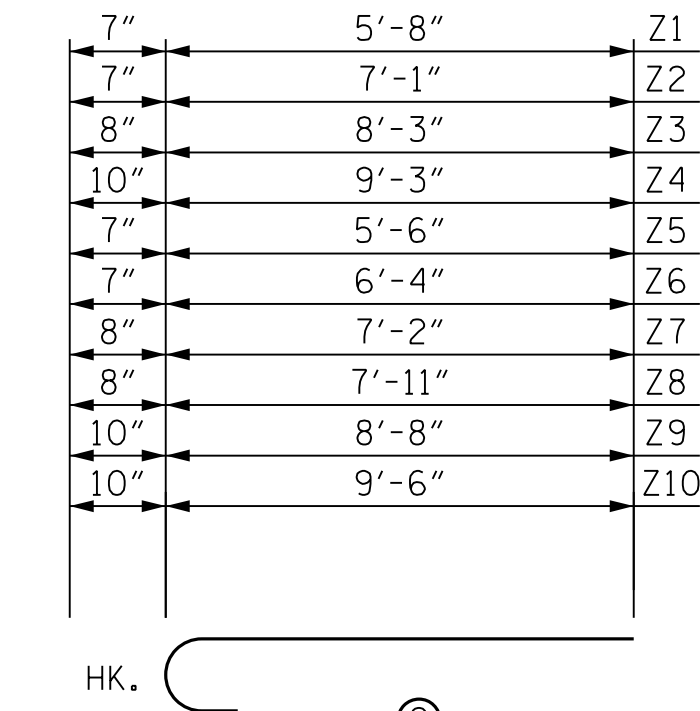
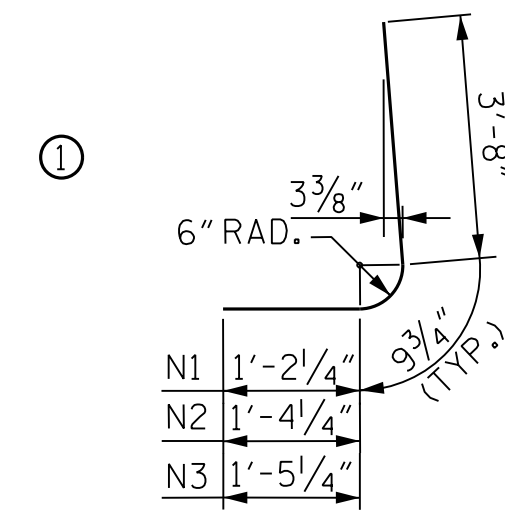
ELEVATION W1



ELEVATION W2



TYPICAL WING SECTION



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
(INLET WINGWALLS)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	18	#4	STR.	10'-2"	122
H2	2	#4	STR.	7'-4"	10
H3	2	#4	STR.	5'-0"	7
H4	5	#4	STR.	10'-6"	35
H5	26	#4	3	3'-3"	56
H6	16	#4	STR.	26'-8"	285
H7	4	#4	STR.	19'-3"	51
H8	2	#4	STR.	11'-9"	16
H9	5	#4	STR.	26'-6"	89
H10	26	#4	3	3'-3"	56
N1	19	#5	1	5'-8"	112
N2	15	#6	1	5'-10"	130
N3	15	#7	1	5'-11"	179
S1	6	#6	STR.	6'-0"	54
T1	4	#4	STR.	10'-3"	27
T2	3	#4	STR.	26'-10"	54
T3	1	#4	STR.	29'-3"	20
V1	8	#4	STR.	8'-1"	43
V2	6	#4	STR.	9'-6"	38
V3	6	#5	STR.	10'-8"	67
V4	6	#7	STR.	11'-8"	143
V5	12	#4	STR.	8'-1"	65
V6	12	#4	STR.	8'-10"	71
V7	12	#5	STR.	9'-7"	120
V8	12	#5	STR.	10'-4"	129
V9	12	#7	STR.	11'-2"	274
V10	12	#7	STR.	11'-10"	290
Z1	4	#5	2	6'-3"	26
Z2	3	#5	2	7'-8"	24
Z3	3	#6	2	8'-11"	40
Z4	4	#7	2	10'-1"	82
Z5	6	#5	2	6'-1"	38
Z6	6	#5	2	6'-11"	43
Z7	6	#6	2	7'-10"	71
Z8	6	#6	2	8'-7"	77
Z9	6	#7	2	9'-6"	117
Z10	6	#7	2	10'-4"	127
REINFORCING STEEL FOR 2 WINGS					3,188 LBS.
CLASS A CONCRETE					
1 FOOTING					19.6 CY
2 WINGS					15.8 CY
1 END CURTAIN WALL					1.5 CY
TOTAL					36.9 CY

PROJECT NO. P-5707
WAKE COUNTY
 STATION: 44+65.00 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR
INLET
HEADWALL

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			
2			4			TOTAL SHEETS
						8

SHEET NO.

S-45

TOTAL
SHEETS

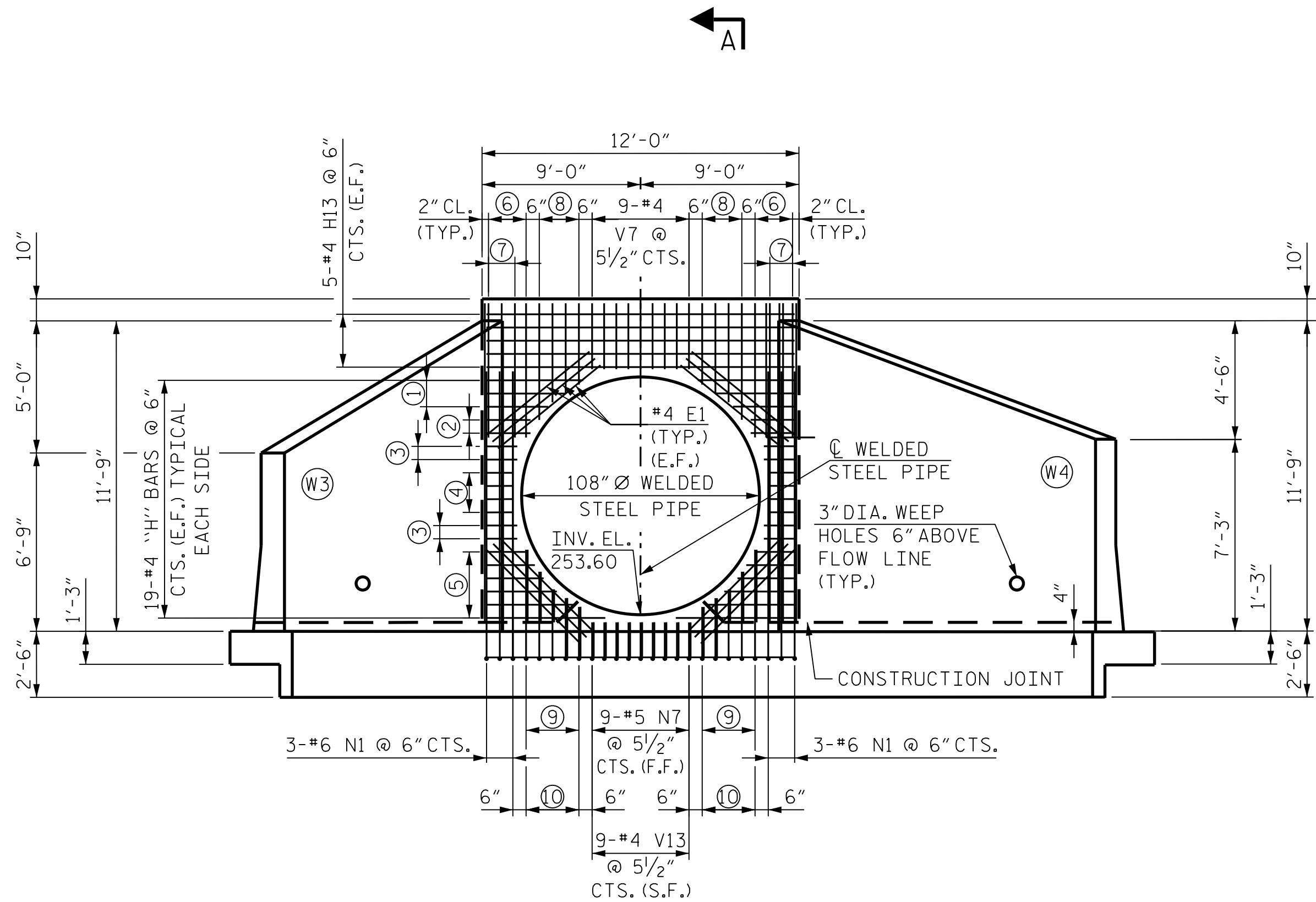
8

RKK
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Raleigh, North Carolina 27615 | NC License No. F-0112
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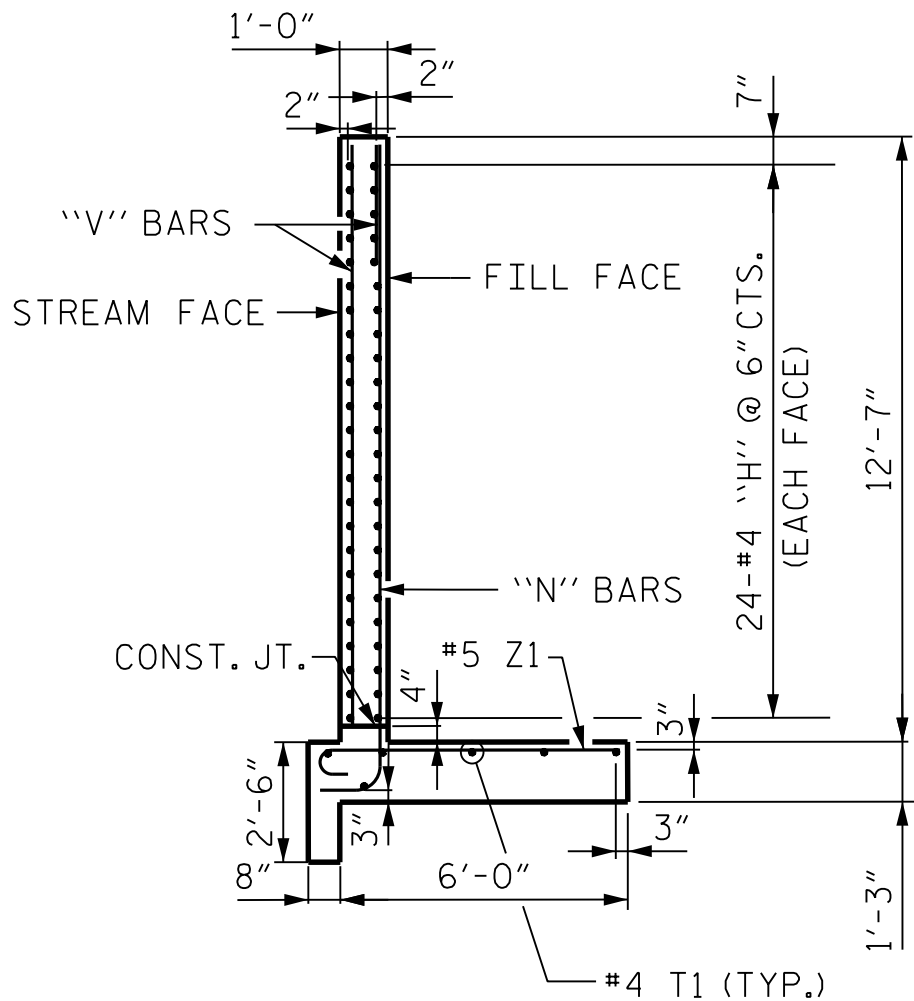
Responsive People | Creative Solutions

**DOCUMENT NOT CONS
UNLESS ALL SIGNATUR**

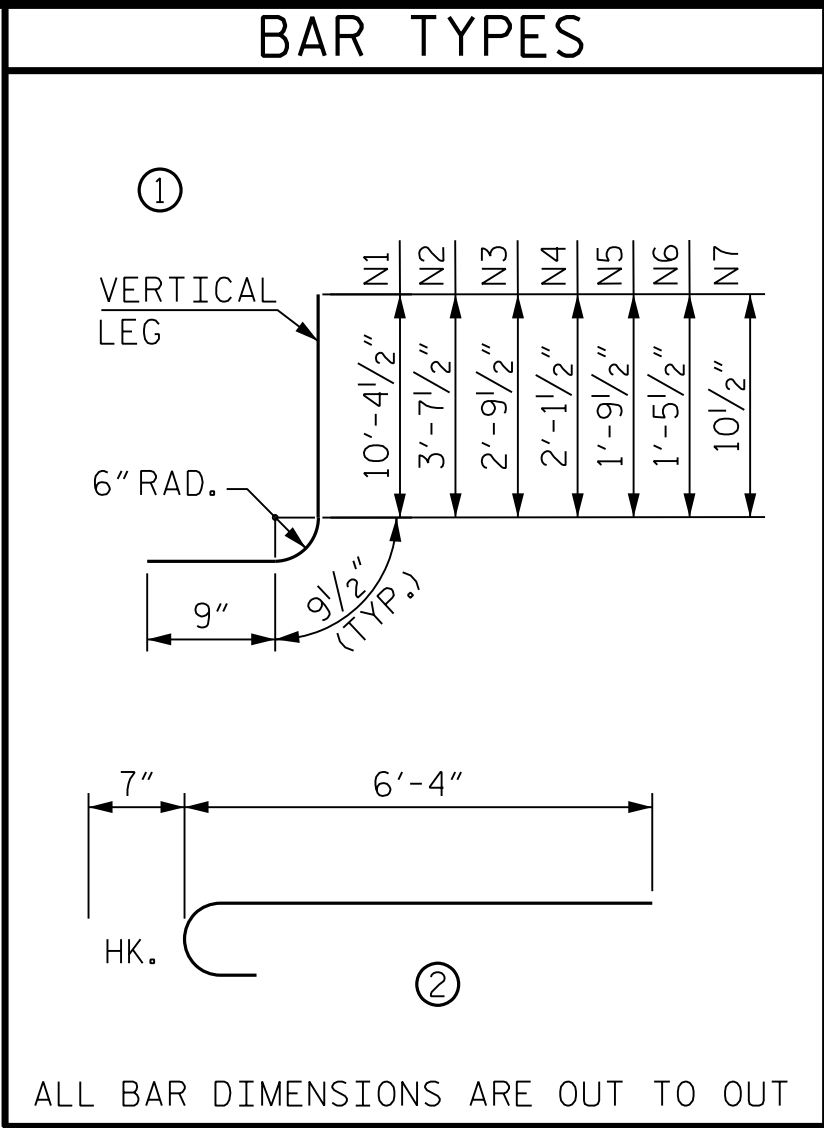
A circular professional engineer seal for the state of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by small dots. In the center, it says "SEAL" above the number "51579". Below the number is a signature that appears to read "Aaron Lee Stroud". At the very bottom of the seal, the name "ARON LEE STROUD" is printed in all caps. To the left of the seal, there is a faint, partially visible stamp that reads "DocuSign".



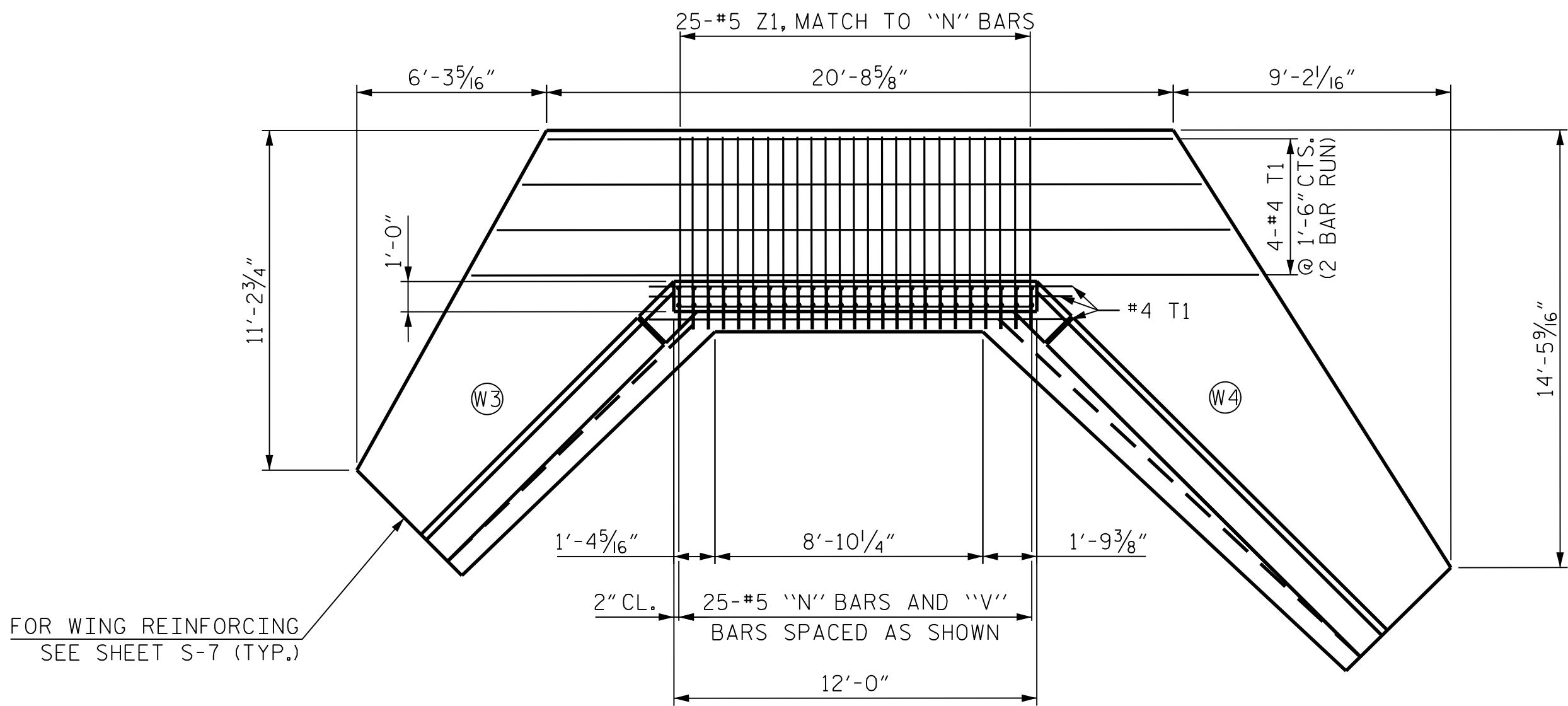
END ELEVATION-OUTLET HEADWALL



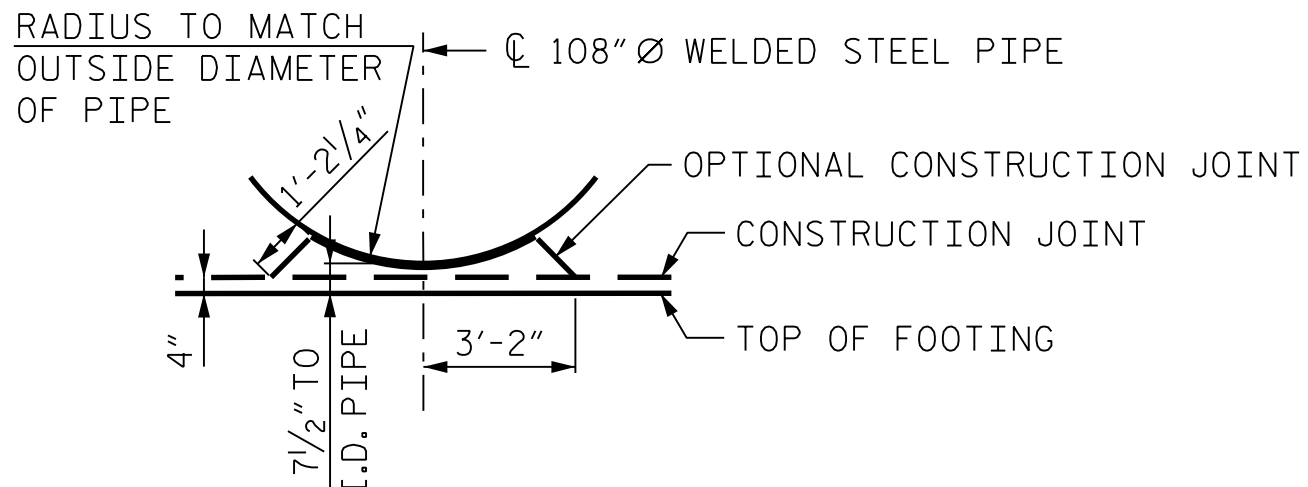
SECTION A-A



BILL OF MATERIAL (OUTLET HEADWALL)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
E1	24	#5	STR.	5'-0"	125
H1	4	#4	STR.	4'-6"	12
H2	4	#4	STR.	3'-4"	9
H3	4	#4	STR.	2'-8"	7
H4	4	#4	STR.	2'-2"	6
H5	4	#4	STR.	1'-10"	5
H6	4	#4	STR.	1'-6"	4
H7	16	#4	STR.	1'-2"	12
H8	16	#4	STR.	1'-0"	11
H9	8	#4	STR.	1'-8"	9
H10	4	#4	STR.	2'-4"	6
H11	4	#4	STR.	3'-0"	8
H12	4	#4	STR.	3'-8"	10
H13	10	#4	STR.	11'-8"	78
N1	6	#7	1	11'-11"	146
N2	2	#5	1	5'-2"	11
N3	2	#5	1	4'-4"	9
N4	2	#5	1	3'-8"	8
N5	2	#5	1	3'-4"	7
N6	2	#5	1	3'-0"	6
N7	9	#5	1	2'-5"	23
V1	6	#4	STR.	12'-1"	48
V2	8	#4	STR.	5'-1"	27
V3	4	#4	STR.	4'-5"	12
V4	4	#4	STR.	3'-9"	10
V5	4	#4	STR.	3'-5"	9
V6	4	#4	STR.	3'-1"	8
V7	18	#4	STR.	2'-6"	30
V8	2	#4	STR.	2'-9"	4
V9	2	#4	STR.	1'-11"	3
V10	2	#4	STR.	1'-3"	2
V11	2	#4	STR.	2'-3"	3
V12	2	#4	STR.	1'-11"	2
V13	9	#4	STR.	1'-4"	7
T1	11	#4	STR.	13'-11"	102
Z1	25	#5	2	6'-11"	180
REINFORCING STEEL					959 LBS.
CLASS A CONCRETE					3.3 CY



PLAN-OUTLET HEADWALL



CONSTRUCTION JOINT DETAIL

- #4 H10-H12 (E.F.)
- 2-#4 H9 (E.F.)
- 2-#4 H7 (E.F.)
- 4-#4 H8 (E.F.)
- #4 H1-H6 (E.F.)
- 4-#4 V2 @ 6" CTS. (S.F.)
- 3-#4 V1 @ 6" CTS. (F.F.)
- #4 V3-V6 @ 6" CTS. (E.F.)
- #5 N2-N6 @ 6" CTS. (E.F.)
- #5 V8-V12 @ 6" CTS. (S.F.)

PROJECT NO. P-5707
WAKE COUNTY
STATION: 44+65.00 -L-

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

108" Ø
WELDED STEEL PIPE HEADWALL
OUTLET END

REVISIONS
NO. BY: DATE: NO. BY: DATE:
1 3
2 4

SHEET NO.
S-46
TOTAL SHEETS
8

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51579
CAROL LEE STROUD
3/31/2026

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DRAWN BY : A. J. WOLCOTT DATE : NOV 2024
CHECKED BY : A. L. STROUD DATE : NOV 2024
DESIGN ENGINEER OF RECORD : A. L. STROUD DATE : NOV 2024

